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FEDERAL COMMUNICATIONS COMMISSION  
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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of

Amendment of Part 90 of the  
Commission's Rules to Adopt  
Regulations for Automatic  
Vehicle Monitoring Systems

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PR Docket No. 93-61

To The Commission:

COMMENTS OF ADEMCO

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### SUMMARY

On January 26, 1994, PacTel Teletrac submitted a new technical proposal in this proceeding which it claims will "improve" the environment for Part 15 devices operating in the 902-928 MHz band. Under the new proposal, PacTel will operate broadband LMS systems on 10 MHz, rather than 16 MHz, of spectrum within the band. ADEMCO strongly disagrees with PacTel's assertion. It would be a serious mistake for the Commission to view PacTel's proposal as a reasonable compromise in this proceeding.

The record shows that PacTel's proposed LMS systems simply cannot coexist with Part 15 devices which operate in the 902-928 MHz band. PacTel's new proposal does absolutely nothing to resolve interference problems which it will encounter from the millions of existing devices which currently operate throughout the entire band. Moreover, PacTel's proposal will lead to the rapid deterioration of the band in the future because the potential for spectrum overcrowding within the band will, almost immediately, force Part 15 manufacturers to cease producing unlicensed products which operate in the band.

ADEMCO continues to believe that the Commission should abandon its proposal to establish LMS. The use of inefficient LMS technology, such as that proposed by PacTel, should not be rewarded -- especially when it threatens to undermine an industry which has done so much with relatively little spectrum. Nonetheless, if the Commission decides to establish LMS, it should issue a Report

and Order which states that if a Part 15 device causes interference to a wideband LMS system, the wideband LMS operator would not have the right, pursuant to Section 15.5(b) of the Commission's rules, to call for the shutdown of the Part 15 device. PacTel should not be permitted to argue, on the one hand, that there is no realistic potential for interference from Part 15 devices, and to expect, on the other hand, that it can demand a shutdown of offending Part 15 equipment if actual interference occurs.

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To The Commission:

**COMMENTS OF ADEMCO**

The Alarm Device Manufacturing Company ("ADEMCO"), a division of Pittway Corporation, by its attorneys, hereby submits these Comments in response to the Public Notice released in the above-captioned proceeding on February 9, 1994. The Public Notice requested comments on ex parte submissions made in this proceeding by PacTel Teletrac ("PacTel") on January 26, 1994, Southwestern Bell Mobile Systems, Inc. ("SBMS") on February 2, 1994 and February 7, 1994, and MobileVision on February 1, 1994.<sup>1/</sup>

PacTel's submission includes a new technical proposal which it claims will "improve" the environment for Part 15 devices. As discussed below, PacTel's new proposal does nothing to improve the Part 15 environment. Moreover, it fails to address the serious interference concerns that have been raised by the Part 15 industry. Thus, it would be a serious mistake for the Commission to view PacTel's proposal as a reasonable compromise that can

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<sup>1/</sup> On February 25, 1994, the Commission released an Order (DA 94-178) which clarified that interested parties may comment on any of the new issues raised by these ex parte filings. The Order also extended the date by which comments must be filed to March 15, 1994.

resolve the substantial technical, legal and policy issues which have been raised by ADEMCO and other parties to this proceeding.

## **I. STATEMENT OF INTEREST**

1. ADEMCO is the largest manufacturer of electronic security monitoring equipment in the United States, and is the acknowledged leader in the development of wired and wireless control technology. Many of ADEMCO's products are unlicensed RF devices that operate in the 902-928 MHz band pursuant to Part 15 of the FCC's rules. ADEMCO's position in this proceeding, as articulated in its previously filed Comments, is that the Commission should abandon its proposal to create a new Location Monitoring Service ("LMS") because wideband LMS systems such as those proposed by PacTel cannot coexist with the millions of Part 15 devices that currently operate in the 902-928 MHz band.<sup>2/</sup>

## **II. BACKGROUND**

2. Section 15.5(b) of the Commission's Rules requires Part 15 devices to accept interference from, and not cause interference to, licensed services.<sup>3/</sup> Throughout this proceeding, PacTel has made it clear that it wants the Commission to give LMS licensees the full benefit of the protection afforded by Section 15.5(b).<sup>4/</sup>

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<sup>2/</sup> See Comments of ADEMCO filed June 29, 1993.

<sup>3/</sup> 47 C.F.R. Section 15.5(b) (1992).

<sup>4/</sup> See e.g., Comments of PacTel filed June 29, 1993 at 12, n. 13 ("[W]hile we recognize that there will be occasional (continued...)

In other words, LMS licensees would be legally entitled to insist that the user of an unlicensed Part 15 device discontinue operating the device if it interferes with LMS operations. If the owner of the device ignores the LMS licensee's demand, the LMS licensee could petition the FCC for an order to force the shutdown of the device.

3. Part 15 devices rarely, if ever, cause interference to licensed services because the FCC's rules are premised on the assumption that such devices will operate at such low power that the potential for actual interference to licensed services is virtually non-existent. Any other approach toward interference avoidance would jeopardize the viability of the Part 15 industry; this regulatory philosophy has been articulated by the Commission on many occasions.<sup>5/</sup>

4. However, the Commission's proposals in this proceeding are truly unique because PacTel's wideband LMS technology, which

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<sup>4/</sup> (...continued)  
instances where Teletrac can and should work with Part 15 users and manufacturers to eliminate interference problems, we do not anticipate any need to modify the Commission's Part 15 policies").

<sup>5/</sup> For example, in its comprehensive rewrite of the Part 15 rules, the Commission stated that it was adopting technical standards that it believed would "minimize the probability that harmful interference will be caused to authorized radio services while still permitting effective economical operation of such devices in most frequency bands." [Emphasis added.] First Report and Order, Gen. Docket No. 87-389, 4 FCC Rcd 3439 at 3496 (1990). In the same proceeding, the Commission addressed the issue of interference in the 902-928 MHz band stating: "We believe that the probability that Part 15 operations will cause interference to authorized services in the ISM bands above 900 MHz is low...[T]he potential for a Part 15 device to receive interference is much greater than the potential for the Part 15 device to cause interference." [Emphasis added.] Id. at 3502.

would be deployed throughout the United States, is extremely susceptible to co-channel interference -- even from low power spread spectrum devices.<sup>6/</sup> The incompatibility of PacTel's technology with existing users of the 902-928 MHz band explains why the Part 15 community has been extraordinarily vocal in its opposition to the proposed LMS rules.

5. PacTel's strategy to date has been to lull the FCC into ignoring the crucial factual question of whether Part 15 devices will interfere with broadband LMS. For example, PacTel has brushed off the interference concerns of the Part 15 industry by telling the Commission that its proposed LMS operations should not have "any appreciable adverse effect on Part 15 operators..."<sup>7/</sup> Yet, PacTel has presented no objective evidence to support this claim. Moreover, PacTel has been unwilling to cooperate with the Telecommunications Industry Association ("TIA") in its efforts to organize a test program to verify TIA's analysis of the potential for interference from Part 15 devices to wideband LMS systems.

### III. DISCUSSION

6. PacTel's most recent ex parte submission includes a new technical proposal which it claims will "improve" the environment

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<sup>6/</sup> See Section III.A. infra.

<sup>7/</sup> PacTel Reply Comments filed July 29, 1993 at 45. See also PacTel Comments filed June 29, 1993 at 52 ("Total system failures are not likely to occur due to interference from [Part 15] users, partly because of the design of Teletrac's network, partly because we have educated some of these users to avoid our frequencies, and partly because of our incentive to minimize service disruptions").



for Part 15 devices because, under the new proposal, PacTel will operate broadband LMS systems on only 10 MHz of spectrum rather than 16 MHz as the Commission proposed in the Notice of Proposed Rulemaking in this proceeding.<sup>8/</sup> However, the record shows that PacTel's proposed LMS systems cannot coexist with Part 15 devices which currently occupy the band. Thus, PacTel's new proposal does absolutely nothing to improve the operating environment for Part 15 devices.

**A. PacTel's Proposal Does Nothing To Resolve Interference Problems Which It Will Encounter From Existing Users Of The 902-928 MHz Band.**

7. While PacTel claims that its new proposal improves the environment for the Part 15 industry, the proposal on its face, does absolutely nothing to reduce the potential for harmful interference from existing Part 15 devices. These devices operate on all 26 MHz in the band, including the 10 MHz that wideband licensees would use under the PacTel proposal.<sup>9/</sup> The National Telecommunications and Information Administration estimates that

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<sup>8/</sup> Notice of Proposed Rulemaking, PR Docket No. 93-61, released April 9, 1993 ("NPRM").

<sup>9/</sup> ADECO's direct sequence spread spectrum devices, for example, utilize a chip in which the company has invested heavily which centers at 911 MHz. This falls squarely within the spectrum that PacTel would propose to utilize under its new proposal (902-912 MHz); it also falls within the spectrum which would be used by PacTel under the Commission's original proposal (904-912 MHz), and within the spectrum which would be used by wideband LMS operators under the revised licensing proposal which SBMS submitted in its February 7, 1994 ex parte filing (906-914 MHz).

more than 2 million Part 15 devices already occupy the entire 902-928 MHz band.<sup>10/</sup>

8. The record in this proceeding is replete with evidence that spread spectrum Part 15 devices will interfere with PacTel's wideband technology. The record shows, for example, that in 1992, PacTel sent a letter to Sherwin-Williams Company in which it complained of interference from a Part 15 spread spectrum device which was manufactured by Cylink Corporation.<sup>11/</sup> PacTel ordered Sherwin-Williams to immediately cease operating the device:

PacTel Teletrac operates a vehicle location system in the greater Chicago area . . . . I recently noticed a signal causing harmful interference to our system and tracked this interference to your plant . . . . This signal is adversely affecting our system and should be removed from the 904MHz-912MHz frequency spectrum immediately.<sup>12/</sup>

9. The record also includes a technical analysis submitted by Metricom, Inc. on June 29, 1993, which demonstrated that even under the best of circumstances, a Part 15 spread spectrum device could interfere with wideband AVM systems within an 8.2 mile

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<sup>10/</sup> U.S. Dept. of Commerce, "Prelim. Spectrum Realloc. Report" at 3-12 (NTIA Special Pub. 94-27, Feb. 1994).

<sup>11/</sup> See Late filed Comments submitted by Cylink Corporation on February 5, 1993 at 1.

<sup>12/</sup> Letter from Henry L. Razor, Network Field Engineer, Pactel Teletrac to George Martin, Sherwin-Williams Company, dated December 29, 1992. See also Comments of ITRON filed June 29, 1993, at p.5, n.3 ("While installing a meter reading system, ITRON became aware of another company's Part 15 device that was interfering with the Teletrac system miles away").

radius.<sup>13/</sup> On October 22, 1993, an additional technical analysis was presented to the FCC's Private Radio Bureau by TIA's Mobile & Personnel Communications Consumer Radio Section ("TIA Study"). The TIA Study quantitatively addressed the issue of interference from Part 15 devices to the receivers of wideband LMS systems. The Study concluded that "Part 15 devices in the 902-928 MHz band pose a serious interference threat to wideband pulse-ranging AVM system's such as Teletrac's". [Emphasis added.]<sup>14/</sup>

10. Just last month, SBMS submitted a new report from the Mobile and Portable Radio Research Group at Virginia Tech which analyzes several of the technical issues raised by Part 15 manufacturers in this proceeding.<sup>15/</sup> The report reflects the preliminary results obtained by Virginia Tech researchers in connection with their evaluation of relevant interference issues associated with real-world LMS operations. The report concluded that "interference issues involving AVM systems and Part 15 devices will require significant further study,"<sup>16/</sup> and it states that "when a Part 15 device is operating much closer to a base station

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<sup>13/</sup> Comments of Metricom, Inc. filed June 29, 1993 at Appendix A.

<sup>14/</sup> TIA Study, Technical Conclusions at 10.

<sup>15/</sup> "Capacity and Interference Resistance of Spread-Spectrum Automatic Vehicle Monitoring Systems in the 902-928 MHz ISM Band," Rick Cameron and Brian D. Woerner, Mobile and Portable Radio Research Group, Bradley Department of Electrical Engineering, Virginia Tech, January 14, 1994.

<sup>16/</sup> Virginia Tech Report at 9.

than an AVM mobile unit, the transmitted power is large enough to produce a significant near/far problem". [Emphasis added.]<sup>17/</sup>

11. Significantly, there is no engineering evidence in the record which disputes the overwhelming evidence that Part 15 equipment will interfere with wideband LMS operations. The FCC cannot ignore this fact. Nor can the Commission ignore the fact that the potential for interference will only increase as millions of new, more powerful, Part 15 devices are introduced into the marketplace in the months ahead.

12. A host of new 902-928 MHz consumer devices, including high powered, digital spread spectrum cordless phones are now being sold throughout the nation. The proliferation of these devices is sure to create an untenable interference situation. The Commission itself has acknowledged the existence of a problem noting that interference such as that experienced by PacTel in Chicago "will likely be a continual concern as new consumer-oriented Part 15 devices . . . are introduced."<sup>18/</sup> Frankly, in view of the Commission's stated awareness of this problem, it is difficult to understand why the Commission ever proposed to move forward with PacTel's licensing proposals in the first place.

13. The anticipated increase in the number of Part 15 devices in the marketplace is a direct result of FCC rule changes that were intended to encourage the development of new technologies in the 902-928 MHz band. In 1985, the Commission adopted rules which

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<sup>17/</sup> Virginia Tech Report at 9-10.

<sup>18/</sup> NPRM at ¶ 24.

permitted unlicensed spread spectrum operations in the 902-928 MHz band subject to specified power limits.<sup>19/</sup> Almost immediately, ADEMCO and other manufacturers began exploring potential new applications for spread spectrum technology.

14. In 1989, in order to further encourage the development of Part 15 products generally, the Commission raised the permissible power limits within the 902-928 MHz band.<sup>20/</sup> More recently, the Commission refined its rules to "significantly increase the potential range of permissible designs for Part 15 spread spectrum systems and thereby broaden the opportunities for development and use of this important new technology."<sup>21/</sup>

15. In response to the Commission's initiatives, manufacturers have invested millions, probably billions, of dollars in the research, development and production of new commercial and consumer products. ADEMCO alone has already invested over \$10 million in new spread spectrum product development. It would be patently unfair for the Commission to jeopardize this investment so soon after it encouraged manufacturers to develop new products for this industry. This is particularly true since there are few, if any, other communications technologies available today that have the potential to provide the breadth of services and the cost/value

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<sup>19/</sup> First Report and Order, Gen. Docket 81-413, 101 FCC 2d 419 (1985).

<sup>20/</sup> First Report and Order, Gen. Docket No. 87-389, 4 FCC Rcd 3493 at 3502 (1989).

<sup>21/</sup> Report and Order, Gen. Docket No. 89-354, 5 FCC Rcd 4123 (1990).

relationship that can be achieved through the use of Part 15 radio networks.<sup>22/</sup>

**B. PacTel's Proposal Does Nothing To Improve The Part 15 Environment In The 902-928 MHz Band Prospectively.**

16. Even ignoring the fact that the installed base of over 2 million Part 15 devices operating on the 902-928 MHz band will interfere with wideband LMS systems, PacTel's new proposal also does nothing to accommodate Part 15 devices that are manufactured in the future. Ironically, by suggesting that its use of less spectrum will "improve" the Part 15 environment, PacTel implicitly is admitting that its LMS technology creates interference problems in the band. Stated differently, PacTel is suggesting that manufacturers of Part 15 devices can avoid interference prospectively by designing new equipment that operates only in the 16 MHz of spectrum where PacTel will not be licensed. The Commission must not be deceived into believing that this is a realistic solution to the concerns expressed by the Part 15 industry.

17. If it is necessary for Part 15 manufacturers to limit their operations to 16 MHz of spectrum, serious design and capacity problems will result. More importantly, if all spread spectrum users of this band are forced to crowd together at 912-928 MHz, the possibility of interference among spread spectrum devices will increase dramatically. Spectrum crowding in the band will be

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<sup>22/</sup> For example, ADEMCO and other manufacturers have designed wireless spread spectrum devices for use today in multiple areas of significant public importance including energy conservation, health care, education and manufacturing.

particularly acute because PacTel's forward link, which apparently is critical to its LMS systems, occupies 250 KHz of spectrum right in the middle of the 16 MHz of "clear" spectrum where Part 15 devices would be relegated. Thus, there would not even be 16 MHz of contiguous "clear" spectrum under PacTel's proposal. This is of particular concern to ADEMCO and other manufacturers of direct sequence spread spectrum devices and will result in further compression of Part 15 operations.<sup>23/</sup>

18. In sum, on a prospective basis, adoption of the PacTel "compromise" will lead to the rapid deterioration -- not the improvement -- of the Part 15 environment. Ultimately, it will result in a de facto reallocation of the band because Part 15 manufacturers will be forced, almost immediately, to cease producing unlicensed products which transmit in such congested spectrum. Significantly, this is precisely what the Commission said it did not propose in this proceeding. In an Erratum released on May 5, 1993, the Commission clarified that in considering interference issues between LMS licensees and Part 15 users, it was seeking potential solutions "short of removing Part 15 users . . . from the band".<sup>24/</sup>

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<sup>23/</sup> Significantly, PacTel's ex parte filing did not even mention the need for this additional spectrum. PacTel merely stated that its new proposal "allocates approximately 16 MHz of spectrum" to narrowband AVM providers. [Emphasis added.] PacTel January 26, 1994 ex parte letter at 1.

<sup>24/</sup> Erratum (PR Docket 93-61) DA 93-516, released May 5, 1993.

**C. PacTel's Proposal Fails To Address Important Public Policy Issues Which The Commission Must Confront In This Proceeding.**

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19. PacTel's proposal fails completely to address the significant public policy concerns which have been raised by ADEMCO and others in this proceeding. The record shows -- and the Commission has acknowledged -- that PacTel's wideband LMS systems cannot coexist with Part 15 devices which operate in the band. In light of the record, the Commission cannot simply chose to ignore the important concerns which have been raised by the Part 15 community. The FCC must address these issues.

20. One way to address these issues is for the Commission to state on the record that, in view of the secondary status of Part 15 operations, it simply does not care that its actions could destroy the Part 15 industry. However, if the Commission makes this decision, it must be fully prepared to deal with the political, legal and economic consequences which would follow. For example, how will the Commission explain to the Congress and the American public why it foreclosed new opportunities for the development of consumer-oriented Part 15 equipment when there are other technologies that could have been used to provide LMS type services without adversely affecting an entire industry? The Commission must also consider what economic and public interest considerations it will rely upon to justify a complete reversal of the FCC's policy to encourage the development of 902-928 MHz equipment just a few years ago. Finally, how will the Commission's



enforcement staff deal with the barrage of interference complaints that will follow the wide-spread deployment of PacTel's technology?

21. Alternatively, if the Commission decides that it is in the public interest to proceed with establishing LMS in the 902-928 MHz band, it could avoid dealing with these difficult issues by doing just one thing. The Commission could provide in its Report and Order that, since Part 15 devices will interfere with wideband LMS, Section 15.5(b) of the Commission's Rules will not apply if Part 15 devices cause interference to wideband LMS systems. In other words, wideband LMS operators would not have the right to call for the shut-down of Part 15 devices operating in the band if such devices interfere with their LMS systems. Despite the theoretical and practical evidence to the contrary, PacTel has repeatedly told the Commission that the presence of Part 15 devices in the band will not create an interference problem for its systems.<sup>25/</sup> If PacTel truly believes that this is the case, it should have not oppose adoption of this proposal.

#### IV. CONCLUSION

22. ADEMCO continues to believe that the Commission should abandon its proposal to establish LMS. The use of inefficient LMS technology should not be rewarded -- especially when it threatens to undermine an industry that has done so much with relatively little spectrum. The Commission must balance the tangible public benefits associated with existing Part 15 uses of the band against

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<sup>25/</sup> See footnote 4 supra.

the intangible and speculative benefits that may result from the deployment of PacTel's technology.

23. Nonetheless, if the Commission decides to move forward with the authorization of LMS, it cannot lawfully sidestep the factual question of whether Part 15 devices will interfere with wideband LMS systems. If the Commission concludes, as it must, that Part 15 devices will interfere with wideband LMS systems, the Commission must make one of two policy choices. Either the Commission must acknowledge that it simply does not care about how its actions in this proceeding will affect the Part 15 industry (in which case the Commission must also be prepared to deal with the political, legal and economic consequences associated with such a decision), or it must adopt rules which ensure that newly authorized wideband LMS operators cannot exercise traditional preemptive rights over Part 15 devices which operate in the 902-928 MHz band.

24. In view of the significant investment and efficient use of the 902-928 MHz band by the Part 15 industry, ADEMCO submits that the only rational and legally justifiable choice is for the Commission to adopt the latter approach and to issue a Report and Order which states that Section 15.5(b) of the Commission's Rules will not apply if wideband LMS systems encounter harmful interference from Part 15 devices. PacTel should not be permitted to argue on the one hand, that there is no realistic potential for interference from Part 15 devices, and to expect, on the other hand, that it can demand the shutdown of offending Part 15 devices if actual interference subsequently occurs.

Respectfully submitted,



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